AMENDMENTS TO THE CLAIMS

Please cancel claims 1-19 without prejudice or disclaimer of their underlying subject matter.

Please amend the claims as follows.

1-19. (Canceled)

20. (Currently Amended) ~~The method according to claim 19~~ A method for producing a radiation detector provided in a substrate with a detection layer which is sensitive to radiation, comprising the steps of:

forming said detection layer by a polycrystal film comprising either one of CdTe (cadmium telluride), ZnTe (zinc telluride) and CdZnTe (cadmium zinc telluride) or a laminate film of polycrystal including at least one thereof, and

doping said detection layer with Cl,

wherein said detection layer is formed by vapor deposition or sublimation while using as a source, a mixture of a first material including at least one of CdTe (cadmium telluride), ZnTe (zinc telluride) and CdZnTe (cadmium zinc telluride) and a second material including at least one of $CdCl_2$ (cadmium chloride) or $ZnCl_2$ (zinc chloride).

Please add the following new claims.

21. (New) A radiation detector comprising the detection layer formed by the method according to claim 20.

22. (New) A radiation imaging apparatus comprising:

the radiation detector according to claim 21;

a plurality of charge accumulation capacitors for accumulating charges from said detection layer; and

a switching matrix substrate including switching devices arranged in array, wherein the switching devices read out charges of said plurality of charge accumulation capacitors.

23. (New) A method for producing a radiation detector comprising:

placing a supporting substrate and a source into a deposition chamber, said source being a mixture of a first material and a second material, said first material including at least one of CdTe (cadmium telluride), ZnTe (zinc telluride) and CdZnTe (cadmium zinc telluride, said second material including at least one of $CdCl_2$ (cadmium chloride) or $ZnCl_2$ (zinc chloride);

reducing pressure within said deposition chamber;

heating said source, said source sublimating and adhering to said supporting substrate to form a detection layer.

24. (New) The method according to claim 23, further comprising:

replacing said source with another source, said another source being a mixture of a third material and a fourth material, said third material including at least one of CdTe (cadmium telluride), ZnTe (zinc telluride) and CdZnTe (cadmium zinc telluride, said fourth material including at least one of $CdCl_2$ (cadmium chloride) or $ZnCl_2$ (zinc chloride);

heating said another source to form a second layer, said second layer forming on said detection layer.

25. (New) The method according to claim 23, wherein:

a common electrode is between said supporting substrate and a hole injection preventing layer; and

said detection layer is between said hole injection preventing layer and said common electrode.

26. (New) The method according to claim 25, wherein said hole injection preventing layer is from the group consisting of a CdS film and a ZnS film.

27. (New) The method according to claim 25, wherein an electron injection preventing layer is between said detection layer and a detection electrode.

28. (New) The method according to claim 27, wherein said electron injection preventing layer is from the group consisting of an Sb_2Te_3 film, an Sb_2S_3 film, and a ZnTe film.

29. (New) The method according to claim 23, wherein:

a common electrode is between said supporting substrate and an electron injection preventing layer; and

said detection layer is between said electron injection preventing layer and said common electrode.

30. (New) The method according to claim 29, wherein said electron injection preventing layer is from the group consisting of an Sb_2Te_3 film, an Sb_2S_3 film, and a ZnTe film.

31. (New) The method according to claim 29, wherein a hole injection preventing layer is between said detection layer and a detection electrode.

32. (New) The method according to claim 31, wherein said hole injection preventing layer is from the group consisting of a CdS film and a ZnS film.

33. (New) A radiation detector comprising the detection layer formed by the method according to claim 23.

34. (New) A radiation imaging apparatus comprising:

the radiation detector according to claim 23;

a plurality of charge accumulation capacitors for accumulating charges from said detection layer; and

a switching matrix substrate including switching devices arranged in array, wherein the switching devices read out charges of said plurality of charge accumulation capacitors.

35. (New) A method for producing a radiation detector comprising:

placing a supporting substrate into a deposition chamber;

forming a detection layer on said supporting substrate, said detection layer being a polycrystal film comprising either one of CdTe (cadmium telluride), ZnTe (zinc telluride) and CdZnTe (cadmium zinc telluride);

introducing a gas into said deposition chamber, said gas containing Cl;

performing a heat treatment on said detection layer and said supporting substrate, said heat treatment doping said detection layer with said Cl.

36. (New) The method according to claim 35, wherein said heat treatment is carried out under atmosphere containing at least one of N_2, O_2, H_2, He, Ne, Ar kept at 1 atmospheric pressure.

37. (New) The method according to claim 35, wherein said heat treatment is carried out under atmosphere containing at least one of N_2, O_2, H_2, He, Ne, Ar kept at 1.3×10^{-4} to 0.5 atmospheric pressure.

38. (New) A radiation detector comprising the detection layer formed by the method according to claim 35.

39. (New) A radiation imaging apparatus comprising:

the radiation detector according to claim 35;

a plurality of charge accumulation capacitors for accumulating charges from said detection layer; and

a switching matrix substrate including switching devices arranged in array, wherein the switching devices read out charges of said plurality of charge accumulation capacitors.